

ABSTRACT OF THE DISCLOSURE

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3 Metallic layer components for use in a direct oxidation fuel cell are disclosed. A
4 direct oxidation fuel cell includes a membrane electrode assembly having an anode face
5 and a cathode face. An anodic diffusion layer is associated with the anode face and a
6 cathodic diffusion layer is associated with the cathode face. The metallic diffusion lay-
7 ers, in accordance with one embodiment of the invention include pores formed in the dif-
8 fusion layer to allow substances to flow through the diffusion layer to the membrane
9 electrolyte and back out again. Another embodiment of the invention incorporates me-
10 tallic layer components that are formed using particle diffusion bonding techniques and
11 are then coated with hydrophilic or hydrophobic substances to control reactant flow and
12 transport. The metallic layers may also perform the function of flow field plates that not
13 only direct the flow of substances to and from the membrane, but also conduct the elec-
14 trons and thus the electricity generated by the cell.